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Application Date: Dec. 9, 1931. No. 34,127/31.

384,441

(Patent of Addition to No. 369,438, dated April 23, 1931.)

One Complete Left: Sept. 9, 1932.

Complete Accepted: Dec. 8, 1932.

PROVISIONAL SPECIFICATION.

Improvements relating to Electric Clocks.

We, S. SMITH & SONS (Motor Accessories) Limited, a Company duly incorporated under the Laws of Great Britain, of Central Works, Edgware Road, Cricklewood, London, and PRIMUS OTTO DORER, a British Subject, of 36, Manor Lane, Lee, London, S.E. 13, do hereby declare the nature of this invention to be as follows:—

10 This invention relates to electric clocks of the kind which depend for their motion upon an alternating current synchronous electric motor. The object of the present invention is to provide an improvement of the hand setting mechanism described and claimed in the Specification of our Patent Application No. 12,033 of 1931 (Serial No. 369,438).

20 The invention consists in the provision on the slidable hand operated spindle and the spring controlled starting lever, of interengaging means which during the inward movement of the spindle first cause the lever to be moved against the action of its spring and later allow the lever to return under the action of the spring to give a starting movement to the clock, the arrangement being such that during the return of the spindle to its initial position the said means are inoperative.

30 In one manner of carrying the improvement into effect, we pivot the starting lever at one end to any convenient part of the clock. The other end of the lever which is provided with a spring controlled detent, is arranged adjacent to a toothed wheel or ratchet on the motor spindle. This lever is controlled by any suitable spring.

40 Transversely across the lever is situated the hand operated axially movable and rotatable spindle which at its outer end is fitted with a knob, and at its inner end with a wheel which can be engaged with the gear train of the clock for setting the hands. On this spindle is provided a collar or other suitable projection which can engage an abutment on the lever. The abutment is rotatably mounted on the lever (which is conveniently made from a rod of circular cross section), and

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is capable of receiving a limited amount of rotational movement on the lever under the control of a spring.

When the spindle is pressed inwards for engaging its wheel with the clock train the collar on the spindle engages the abutment, and by its interaction with an inclined face on the abutment moves the lever past the wheel or ratchet on the motor spindle against the action of its spring. Continued inward movement of the spindle carries the collar past the abutment, and the lever can then return suddenly under the action of its spring, the rear side of the abutment being suitably shaped to allow a quick movement of the lever. During the return of the lever the detent on the lever imparts a flick to the wheel or ratchet and thereby starts the motor.

While the spindle is in its inner position it can be rotated for setting the hands of the clock. On release of the spindle it returns to its initial position under the action of a spring, and in so doing the projection on the spindle passes idly over the abutment on the lever, the abutment being free to rock without affecting the lever during this movement.

In another form of our improvement, we provide a fixed abutment on the lever, and arrange a movable projection on the spindle. This projection may consist of a pivoted pawl, or an equivalent tiltable spring controlled disc, on the spindle which in one direction is supported by a fixed collar on the spindle. In one direction of movement of the spindle, the pawl or disc engages the abutment and depresses the starting lever. Later in the same movement the pawl or disc clears the abutment and allows the lever to return quickly. During the reverse movement of the spindle the pawl or disc slides idly over the abutment against the action of the spring acting on the pawl or disc.

Dated this 8th day of December, 1931.

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COMPLETE SPECIFICATION.

Improvements relating to Electric Clocks.

We, S. SMITH & SONS (MOTOR ACCESSORIES) LIMITED, a Company duly incorporated under the Laws of Great Britain, of Central Works, Edgware Road, Cricklewood, London, and PRIMUS OTTO DORER, a British Subject, of 36, Manor Lane, Lee, London, S.E. 13, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to electric clocks of the kind which depend for their motion upon an alternating current synchronous electric motor. The object of the present invention is to provide an improvement of the hand setting mechanism described and claimed in the Specification of our Patent No. 369,438.

The present invention consists in the provision on the slidable hand operated spindle and the spring controlled starting lever, of interengaging means which during an axial movement of the spindle first cause the lever to be moved against the action of its spring and later allow the lever to return under the action of the spring to give a starting movement to the clock, the arrangement being such that during the opposite axial movement of the spindle the said means are inoperative.

In the two accompanying sheets of explanatory drawings:—

Figure 1 is a side elevation illustrating diagrammatically a clock starting mechanism embodying our improvement.

Figures 2 and 3 are plan views of the mechanism.

Figure 4 is a side elevation showing the improvement in a modified form.

Referring to Figures 1—3, we pivot the starting lever *a* at one end to any convenient part of the clock frame. The other end of the lever is provided with a pivoted detent *b* controlled by a spring *c*, the detent being arranged adjacent to a toothed wheel or ratchet *d* on the driving motor spindle of the clock. This lever is controlled by any suitable spring *m*.

Transversely across the lever is situated the hand operated axially movable and rotatable spindle *e* which at its outer end is fitted with a knob *f*, and at its inner end with a wheel *g* which can be engaged with a pinion *h* of the gear train of the clock for setting the hands. On

this spindle is provided a collar *i* or other suitable projection which can engage an abutment *j* on the lever. The abutment is rotatably mounted on the lever (which is conveniently made from a rod of circular cross section), and is capable of receiving a limited amount of rotational movement in one direction on the lever under the control of a spring *k*.

When the spindle *e* is pressed inwards for engaging its wheel *g* with the pinion *h* of the clock train the collar *i* on the spindle engages the abutment, and by its interaction with an inclined edge *l* on the abutment presses the lever past the wheel or ratchet *d* on the motor spindle against the action of the spring *m*. Continued inward movement of the spindle carries the collar *i* past the abutment, and the lever can then return suddenly under the action of its spring *m*, the rear side of the abutment being suitably shaped to allow a quick movement of the lever. During the return of the lever the detent on the lever imparts a flick to the wheel or ratchet and thereby starts the motor.

While the spindle is in its inner position it can be rotated for setting the hands of the clock. On release of the spindle it returns to its initial position under the action of a spring *n*, and in so doing the collar *i* on the spindle passes idly over the abutment on the lever, the abutment being free to rotate on the lever without rocking the latter during this movement.

In another form of our improvement, we provide an abutment fixed on the lever, and arrange a movable abutment on the spindle in place of the collar *i*. In one direction (inward) of movement of the spindle, the movable abutment engages the fixed abutment and depresses the starting lever. Later in the same movement the movable abutment clears the fixed abutment and allows the lever to return quickly. During the reverse movement of the spindle the movable abutment slides idly over the fixed abutment against the action of the spring acting on the movable abutment. This arrangement is virtually the same as that above described, but with the positions of the fixed and movable abutments interchanged.

The arrangement shown in Figure 4 is essentially similar to that shown in Figures 1—3, but is adapted to permit the spindle *e* to slide in a direction parallel with the face of the clock instead of at

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right angles thereto. In this case the lever *a* is of bell crank form, the abutment *j* forming one arm of the lever and being movable relatively to the other arm to a limited extent under the control of a spring. Also the plane of the pinion *g* is at right angles to the plane of the wheel or pinion *h*. When the spindle *e* is moved upwards for engaging *g* and *h*, the collar *i* moves idly past the abutment *j*, the latter yielding under the control of the spring *k* to permit this movement. When the spindle *e* returns under the action of the spring *n*, the collar *i* first engages the abutment *j* and causes the lever *a* to move past the ratchet *d*. Later the collar passes out of engagement with *j*, and the lever *a* is then free to return under the action of the spring *m* and give a starting flick to the ratchet *d*.

In the construction shown in Figure 4, the pin *g* is free to slide on the spindle *c* to enable it to yield if necessary when engaging the pinion *h*, and the pinion *g* is held in its effective hand setting position by a spring *o* on the spindle.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. The improvement in the invention claimed in our Patent No. 369,438 consisting in the provision on the slidable hand operated spindle and the spring controlled

starting lever, of interengaging means which during an axial movement of the spindle in one direction first cause the lever to be moved against the action of its spring and later allow the lever to return under the action of the spring to give a starting movement to the clock, the arrangement being such that during the axial movement in the opposite direction the said means are inoperative.

2. The improvement in the invention claimed in our Patent No. 369,438 comprising the combination of a slidable and rotatable spindle having a hand setting wheel thereon, a collar on the spindle, a motor starting lever, and a spring controlled abutment on the lever engageable by the said collar, the arrangement being such that during the axial movement of the spindle in one direction the collar first acts on the abutment for moving the lever and then allows the lever to return freely under the action of a spring for starting the clock motor, the abutment permitting the collar to pass it idly during the opposite movement of the spindle, substantially as described.

3. The improvement in the invention claimed in our Patent No. 369,438 comprising the combination and arrangement of parts, substantially as described and as illustrated in either Figures 1—3, or Figure 4 of the accompanying drawings.

Dated this 6th day of September, 1932.

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This Drawing is a reproduction of the Original on a reduced scale.

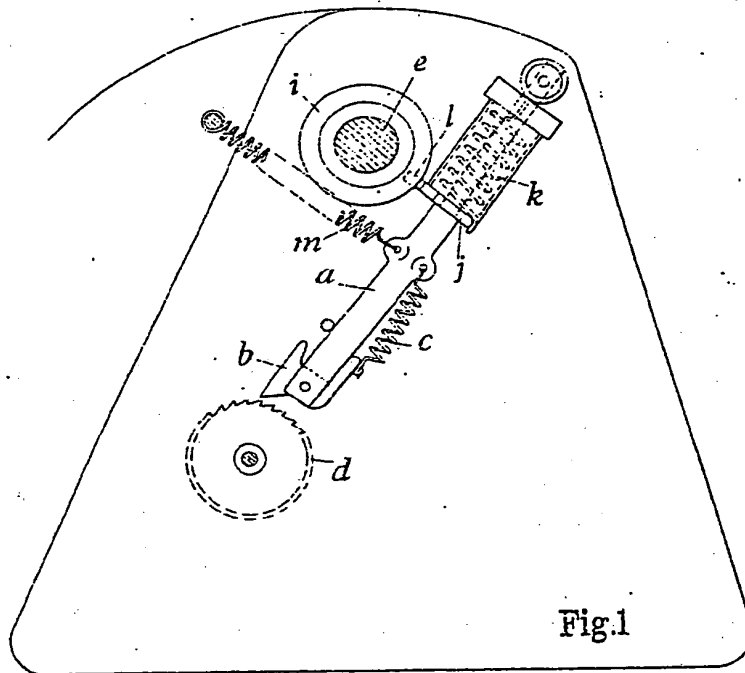


Fig.1

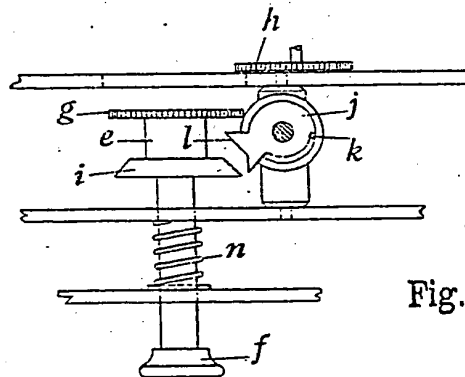


Fig.2

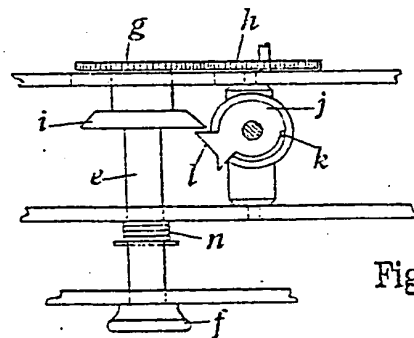


Fig.3

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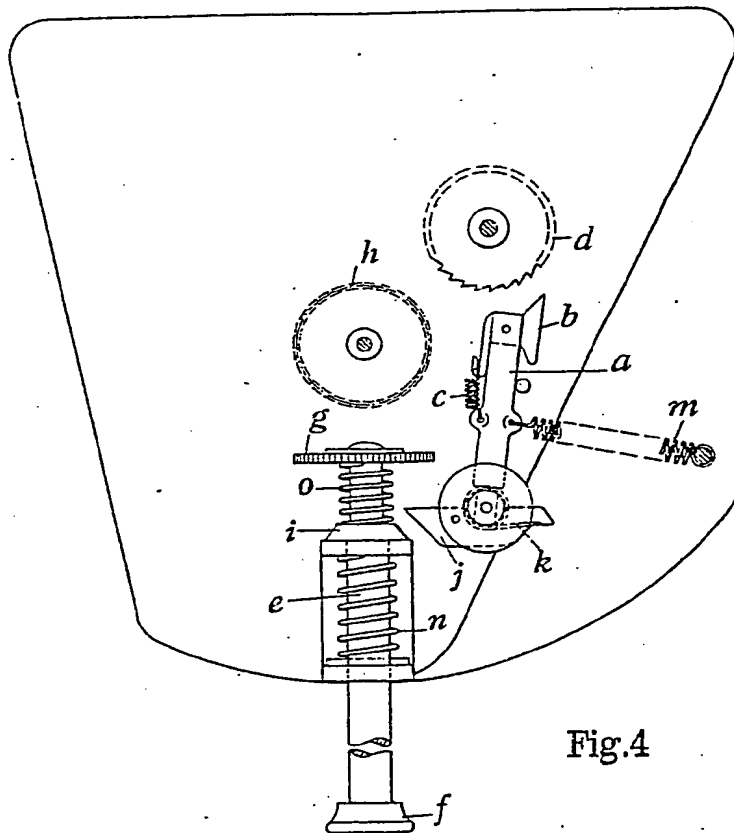


Fig. 4

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[This Drawing is a reproduction of the Original on a reduced scale]

384,441 COMPLETE SPECIFICATION

SHEET 1

2 SHEETS
SHEET 2

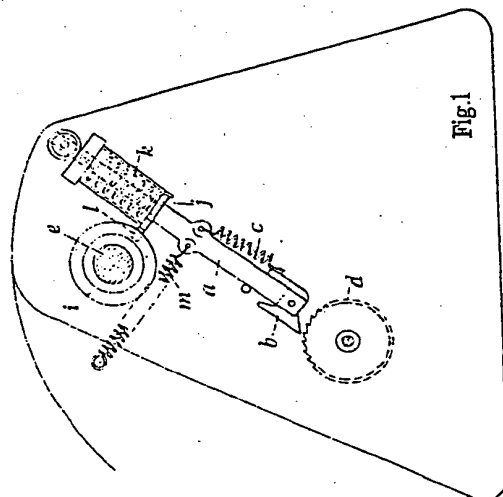


Fig. 1

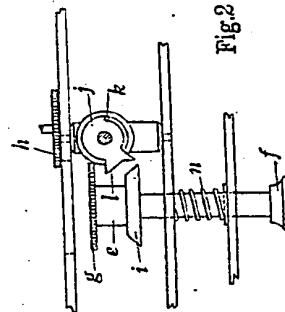


Fig. 2

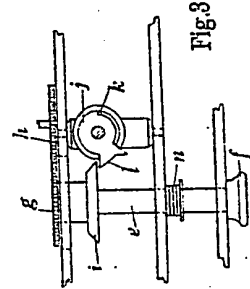


Fig. 3

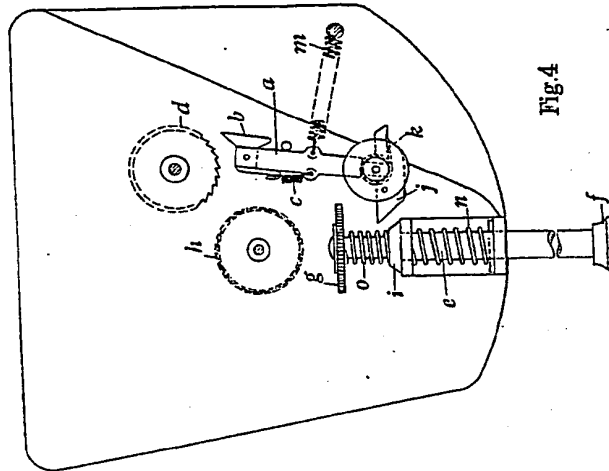


Fig. 4

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